Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

METALWORK AND WELDING ORDINARY LEVEL 6188/1

PAPER 1 2 hours

Marks 100 **2022**

Additional Materials: Non-programmable calculator

INSTRUCTIONS AND INFORMATION TO CANDIDATES

- Write your Centre Number, Candidate Number and Name in the spaces at the top of this page and on all separate answer sheets used.
- Write in dark blue or black pen.
- You may use a soft pencil for any rough work, diagrams or graphs.
- You may use a non-programmable calculator.
- Do not use correction fluids.
- Do not write in the margin *For Examiner's Use*.
- You may use blank pages for working drawings or when answers are crossed out and corrected.
- Sketches and drawings should be done on spaces provided on the question paper.
- The number of marks is given in brackets [ ] at the end of each question or part question

For Examiner's Use	
Section A	
Section B	
Total	

Marker	
Checker	

This document consists of **17** printed pages and **3** blank pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

For Examiner's Use

SECTION A

1 Fig. 1 shows a welder busy welding.

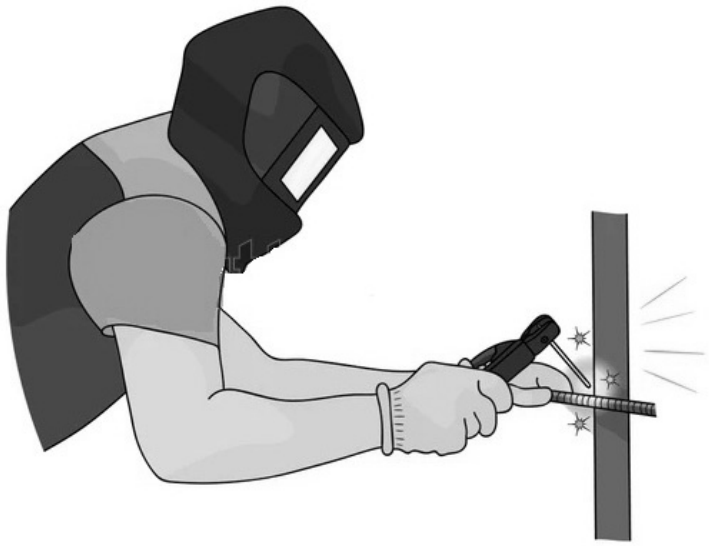

Fig. 1

(a) Identify the welding method in Fig. 1.

..... [1]

(b) Sate **one** safety rule to be applied when welding.

.....

..... [1]

2 Describe steps to be taken when treating a person with an open bleeding wound with HIV/AIDS in mind.

1.....

.....

2.....

.....

3.....

..... [3]

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3 Fig. 2 shows a precision instrument.

Fig. 2

(a) Identify the instrument in Fig. 2.

..... [1]

(b) State **two** functions of the instrument in Fig. 2.

1 .....

.....

2 .....

..... [2]

4 Complete the table below by filling in the missing information.

Tools	Uses
Chipping hammer	
Centre punch	
Steel brush	
Divider	

[4]

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5 Fig. 3 Shows Types of calipers.

A **B**

Fig. 3

Identify the calipers **A** and **B** in Fig. 3.

A ..... [1]

B ..... [1]

6 Use sketches to show the profiles in which the following metals are produced.

Round tube

[2]

Angle iron

[2]

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7 Fig. 4 shows a metal section.

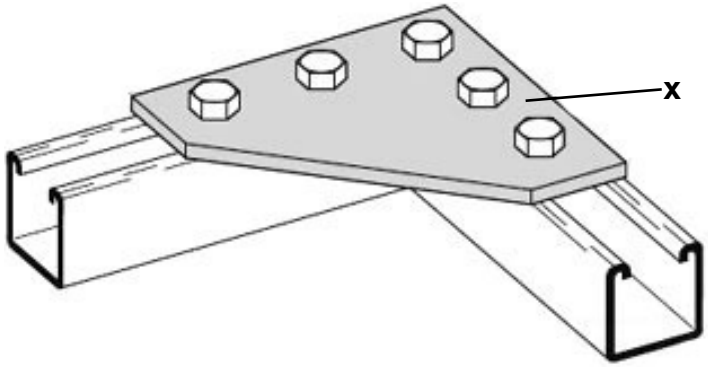

Fig. 4

(a) Identify the metal section marked **X** in Fig. 4.

..... [1]

(b) State **two** functions of the metal section in Fig. 4.

1 .....

.....

2 .....

..... [2]

8 Describe the following types of metals:

(a) *Ferrous metals*:

.....

..... [1]

(b) *Alloys*:

.....

.....

.....

..... [2]

9 List information needed when ordering screws from a hardware store.

1 .....

.....

2 .....

.....

3 .....

..... [3]

For Examiner's Use

10 Fig. 5 shows a water can with two parts marked Part **A** and Part **B** made of sheet metal.

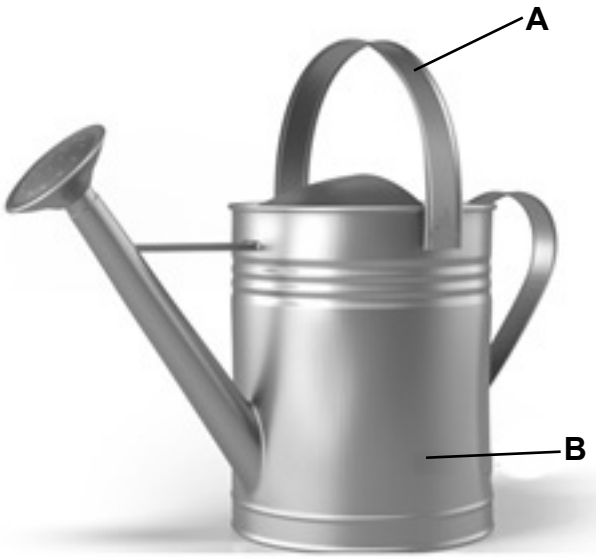

Fig. 5

Use sketches and notes to show how to join part **A** to part **B** by means of rivets in the space provided below.

[3]

[30]

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SECTION B

11 **(a)** Fig. 6 shows knife blades made from round bar.

Fig. 6

(i) State the type of metal that is suitable for making the knife blades in Fig. 6.

.....

..... [1]

(ii) Name the method used to form shapes of arrow heads and knife blades.

.....

..... [1]

(iii) Describe the process named in **(ii)**.

.....

.....

.....

.....

.....

.....

.....

..... [4]

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(b) Give **two** reasons why:

(i) a scriber is made of tool steel and not from mild steel.

1 .....

.....

2 .....

..... [2]

(ii) corrugated roof sheets are made of galvanize iron and not from copper.

1 .....

.....

2 .....

..... [2]

[10]

For Examiner's Use

12 **(a)** Complete the table below by stating the properties of the following metals: copper, cast Iron, aluminium.

Metal	Properties
Copper	1 .... 2 ....
Cast Iron	1..... ..... 2..... .....
Aluminium	1..... ..... 2..... .....

[6]

(b) A spark test is one of the ways used to determine the carbon content of metals.

(i) Describe how a spark test is carried out.

.....

.....

.....

..... [2]

(ii) Explain how the result in **(i)** is interpreted.

.....

.....

.....

..... [2]

[10]

For Examiner's Use

13 Describe how the following heat treatment processes are carried out on metals.

(a) Tempering of mild steel

.....

.....

.....

.....

..... [3]

(b) Annealing of copper

.....

.....

.....

.....

.....

..... [3]

(c) Work hardening of mild steel

.....

.....

.....

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.....

.....

..... [4]

[10]

For Examiner's Use

14 **(a)** Fig. 7 shows types of hand snips.

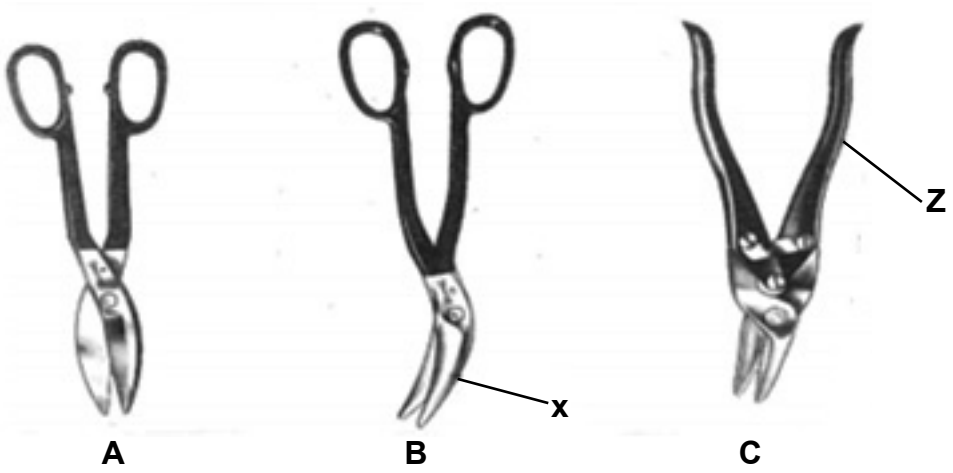

Fig. 7

(i) Identify the hand snips labelled **A** and **B** in Fig 7.

A:.....

B: ..... [2]

(ii) State **one** specific metal from which part **X** is made of.

..... [1]

(iii) Give **one** reason why part **Z** is covered with rubber.

.....

..... [1]

(b) Painting is a common finish used on mild steel product.

(i) Give **two** reasons why painting is applied on mild steel products.

1 .....

.....

2 .....

..... [2]

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(ii) Describe step by step how the finish in **(i)** could be applied.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[10]

For Examiner's Use

15 Fig. 8 shows oxy-acetylene welding equipment.

Fig. 8

(a) Describe how acetylene containers should be stored safely.

.....

.....

.....

..... [2]

(b) Describe safe methods to test oxy-acetylene equipment for leaks.

.....

.....

.....

..... [2]

(c) Fig. 9 shows different oxy-acetylene welding flames.

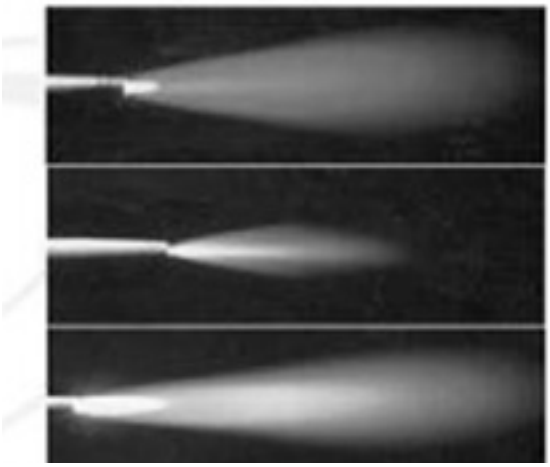

Fig. 9

Describe safe methods to light and adjust the welding torch.

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.....

.....

.....

.....

.....

.....

..... [4]

(d) Flashback occurs when the torch valve is not turned off when the cylinder is empty. Sometimes flashback is due to an incorrect acetylene or oxygen pressure.

Describe the consequences of flash back in oxy-acetylene welding.

.....

.....

.....

..... [2]

[10]

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16 Fig. 10 shows a netball pole. You are required to design a removable netball pole that could be used for both primary school and secondary school learners outdoors. The poles should be removed after every game or practice session.

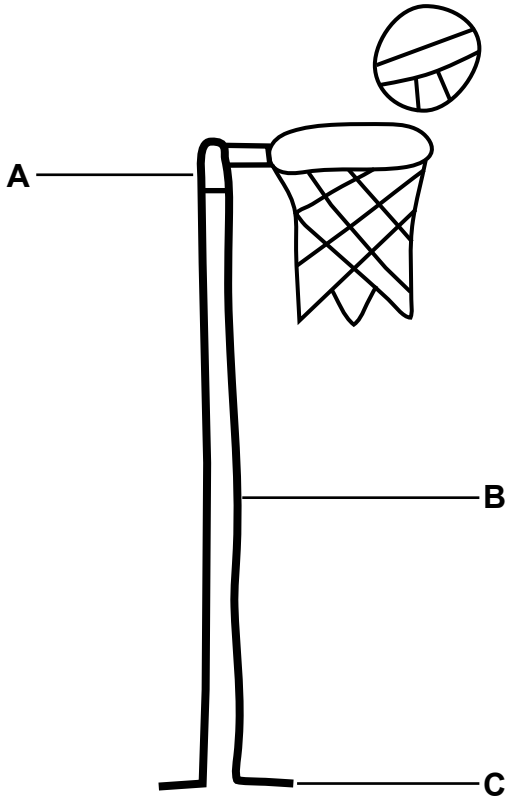

Fig. 10

(a) Use sketches and notes to propose how the pole could be adjusted at Part **A** to suit the size of primary school children.

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(b) Use sketches and notes to show how Part **B** could be fitted at Part **C**.

[10]

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17 Galvanize could be applied to the netball pole in Fig. 10 instead of painting to protect against weather elements.

(a) Describe how the type of finish could be applied to the netball pole.

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.....

..... [5]

(b) Describe possible dangers that may occur as a result of negligence when carrying out the process in **(a)**.

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.....

.....

.....

..... [5]

[10]

[70]

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